

## WHAT WE CLAIM IS:

1. An image matching system for matching a first image and a second image, comprising:

a correction information generating means for  
5 performing a Fourier transform and a log-polar coordinate transform to said first image and said second image and generating correction information of said first image based on the results of said Fourier transform and log-polar coordinate transform; and

10 a matching means for performing processing of correction of said first image based on said correction information generated by said correction information generating means, processing of correlation of said corrected first image and said second image, and  
15 processing of matching the results of said correlation processing.

2. An image matching system as set forth in claim 1, wherein:

said correction information generating means  
20 performs a further Fourier transform based on the results of said log-polar coordinate transform of said first image and said second image and generates scalar information and/or rotation information as said correction information based on correlation strength of  
25 said Fourier transformed first image and second image, and

said matching means performs processing of correction of said first image based on said scalar information and/or said rotation information generated by said correction information generating means.

5           3.     An image matching system as set forth in claim 2, wherein said correction information generating means generates said scalar information and/or rotation information as said correction information based on correlation strength of phase information of said Fourier  
10 transformed first image and second image.

          4.     An image matching system as set forth in claim 1, wherein said correction information generating means performs a Fourier-Mellin transform to said first image and said second image, performs processing for  
15 correlation between said Fourier-Mellin transformed first image and second image, and generates said scalar information and/or rotation information as said correction information.

          5.     An image matching system as set forth in  
20 claim 2, wherein said matching means performs processing of correction of said first image based on said scalar information and/or said rotation information generated by said correction information generating means, performs processing for Fourier transform to said corrected first  
25 image and second image, and performs correlation processing based on said Fourier transformed first image

and second image.

6. An image matching system as set forth in claim 2, wherein said matching means performs processing of correction of said first image based on said scalar  
5 information and/or said rotation information generated by said correction information generating means, performs processing for Fourier transform to said corrected first image and second image, and performs correlation processing based on phase information of said Fourier  
10 transformed first image and second image.

7. An image matching system as set forth in claim 1, wherein said matching means generates parallel movement information of said corrected first image and second image based on a peak position of correlation  
15 strength of phase information of said corrected first image and second image, extracts common areas of said first image and said second image based on said movement amount information, performs processing for correlation of said extracted common areas, and performs processing  
20 for matching said first image and said second image based on the results of said correlation processing.

8. An image matching system as set forth in claim 1, wherein said matching means generates parallel movement information of said corrected first image and  
25 second image based on a peak position of correlation strength of phase information of said corrected first

image and second image and performs processing for matching said first image and said second image when said parallel movement information is smaller than a predetermined amount of parallel movement.

5           9.     An image matching method for matching a first image and a second image, comprising:

              a first step of performing a Fourier transform and a log-polar coordinate transform to said first image and said second image and generating  
10     correction information of said first image based on the results of said Fourier transform and log-polar coordinate transform; and

              a second step of performing processing of correction of said first image based on said correction  
15     information generated in said first step, processing of correlation of said corrected said first image and said second image, and processing of matching the results of said correlation processing.

              10.   An image matching method as set forth in  
20     claim 9, wherein:

              in said first step, a further Fourier transform is performed to the results of said log-polar coordinate transform of said first image and said second image and scalar information and/or rotation information  
25     is generated as said correction information based on correlation strength of said Fourier transformed first

image and second image, and

in said second step, processing for correction is performed to said first image based on said scalar information and/or said rotation information  
5 generated at said first step.

11. An image matching method as set forth in claim 10, wherein in said first step, said scalar information and/or rotation information is generated as said correction information based on correlation strength  
10 of phase information said Fourier transformed first image and second image.

12. An image matching method as set forth in claim 9, wherein in said first step, a Fourier-Mellin transform is performed to said first image and said  
15 second image, processing for correlation between said Fourier-Mellin transformed first image and second image is performed, and said scalar information and/or rotation information is generated as said correction information.

13. An image matching method as set forth in claim 10, wherein in said second step, processing of correction of said first image is performed to said scalar information and/or said rotation information generated at said first step, processing for Fourier transform is performed to said corrected first image and  
20 second image, and correlation processing is performed to said Fourier transformed first image and second image.  
25

14. An image matching method as set forth in claim 10, wherein in said second step, processing of correction of said first image is performed to said scalar information and/or said rotation information  
5 generated at said first step, processing for Fourier transform is performed to said corrected first image and second image, and correlation processing is performed to phase information of said Fourier transformed first image and second image.

10 15. An image matching method as set forth in claim 9, wherein in said second step, parallel movement information of said corrected first image and second image is performed to a peak position of correlation strength of phase information of said corrected first  
15 image and second image, common areas of said first image and said second image are extracted from said movement amount information, processing for correlation of said extracted common areas is performed, and processing for matching said first image and said second image is  
20 performed to the results of said correlation processing.

16. An image matching method as set forth in claim 9, wherein in said second step, parallel movement information of said corrected first image and second image is generated based on a peak position of  
25 correlation strength of phase information of said corrected first image and second image and processing for

matching said first image and said second image is performed when said parallel movement information is smaller than a predetermined amount of parallel movement.

17. A program to be executed by an information  
5 processing apparatus for performing processing for matching a first image and a second image, comprising:

a first routine for performing a Fourier transform and a log-polar coordinate transform to said first image and said second image and generating  
10 correction information of said first image based on the results of said Fourier transform and log-polar coordinate transform; and

a second routine for performing processing for correction said first image to said correction  
15 information generated by said first routine, processing for correlation of said corrected said first image and said second image, and processing for matching the results of said correlation processing.

18. A program as set forth in claim 17, wherein:  
20 said first routine performs a further Fourier transform based on the results of said log-polar coordinate transform of said first image and said second image and generates scalar information and/or rotation information as said correction information based on  
25 correlation strength of said Fourier transformed first image and second image, and

said second routine performs processing for correction of said first image based on said scalar information and/or said rotation information generated at said first routine.

5           19.   A program as set forth in claim 18, wherein  
said first routine generates said scalar information  
and/or rotation information as said correction  
information based on correlation strength of phase  
information said Fourier transformed first image and  
10 second image.

          20.   A program as set forth in claim 17, wherein  
said first routine performs a Fourier-Mellin transform to  
said first image and said second image, performs  
processing for correlation between said Fourier-Mellin  
15 transformed first image and second image, and generates  
said scalar information and/or rotation information as  
said correction information.

          21.   A program as set forth in claim 18, wherein  
said second routine performs processing for correction of  
20 said first image based on said scalar information and/or  
said rotation information generated at said first routine,  
performs processing for Fourier transform on said  
corrected first image and second image, and performs  
correlation processing based on said Fourier transformed  
25 first image and second image.

          22.   A program as set forth in claim 19, wherein



said second routine performs processing for correction of  
said first image based on said scalar information and/or  
said rotation information generated at said first routine,  
performs processing for Fourier transform to said  
5 corrected first image and second image, and performs  
correlation processing based on phase information of said  
Fourier transformed first image and second image.

23. A program as set forth in claim 17, wherein  
said second routine generates parallel movement  
10 information of said corrected first image and second  
image based on a peak position of correlation strength of  
phase information of said corrected first image and  
second image, extracts common areas of said first image  
and said second image based on said movement amount  
15 information, performs processing for correlation of said  
extracted common areas, and performs processing for  
matching said first image and said second image based on  
results of said correlation processing.

24. A program as set forth in claim 17, wherein  
20 said second routine generates parallel movement  
information of said corrected first image and second  
image based on a peak position of correlation strength of  
phase information of said corrected first image and  
second image and performs processing for matching said  
25 first image and said second image when said parallel  
movement information is smaller than a predetermined

amount of parallel movement.